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ABSTRACT

The eight studies contained in this volume complete the effort pursued by the National Middle School Association to provide practitioners with some of the research available from the recent past. Research briefs deal with such topics as teacher attitudes; the degree of middle school program implementation; gifted students' and educable mentally retarded students' needs; middle school principals; teaching decimals with calculators; and administrative style and organizational climate. A bibliography accompanies each study. (MLF)

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INTRODUCTION

The publication of Middle School Research, Selected Studies 1977-79, Volume III, completes the effort pursued by the Association during this past year. It was our goal to provide the practitioner with some of the research available from the recent past.

As a result of the Annual Symposia held in conjunction with the National Middle School Association Annual Conference, meaningful research efforts and results will be published each November. Through these offerings of the Association, an effective forum, along with a distribution outlet, is now available for middle school oriented research.

Hal D. Gaddis
Executive Director

ACKNOWLEDGMENTS

As previously stated in Volume II of Middle School Research, Selected Studies 1977-79, gratitude is expressed to Dr. Myron R. Basom, Director of the Center for Research Service and Publication, and Dr. Alfred A. Arth, Publication Director, both of the University of Wyoming, Laramie, Wyoming.

This publication represents the culmination of reproducing and reprinting all of the research briefs which were originally published in the 1977-79 compilation. It is hoped the information contained in this document, and in the other research publications will be of value to those who are in the process of initially developing a middle school program in their respective communities. Program planning based on a sound research base is vital to assure the successful implementation of an effective middle school program.

Robert M. Malinka
Editor

CONTENTS

INTRODUCTION AND ACKNOWLEDGMENTS i

TEACHER RESPONSE TO GIFTED MIDDLE SCHOOL STUDENTS
Michael L. O'Brien 1

THE JUNIOR HIGH TEACHER AS A CLASSROOM EVALUATOR
Marlene I. Strathe 8

THE CURRENT STATUS OF OHIO MIDDLE SCHOOLS IMPLEMENTATION OF EIGHTEEN MIDDLE SCHOOL CHARACTERISTICS
Tom Bohlinger 17

A COMPARISON OF THE ATTITUDES OF ELEMENTARY, MIDDLE AND HIGH SCHOOL TEACHERS
Jeffrey S. Gordon 24

A STUDY OF THE PERCEPTIONS OF PERFORMANCE SKILLS OF MIDDLE SCHOOL PRINCIPALS BY SELECTED TEACHERS AND PRINCIPALS
Calvin F. Meyer, John J. Van Hoose 31

ADMINISTRATIVE STYLE AND ORGANIZATIONAL CLIMATE IN JUNIOR HIGH AND MIDDLE SCHOOLS
David L. Edge, Jerry W. Valentine 42

TEACHING DECIMAL MATH WITH CALCULATORS
Martin Kenner 48

EXCEPTIONAL STUDENTS: EXCEPTIONAL NEEDS
Marilyn Burt, John Scouller, Robert Myrick 54

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TEACHER RESPONSE TO GIFTED MIDDLE SCHOOL STUDENTS

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Introduction

Authorities such as Jacobs (1972), Smidchens and Sellin (1976), and Magary and Freehill (1972) have suggested that the teacher of gifted students should be accepting the giftedness and should encourage abstract thought in gifted learners. However, there is a consensus in the literature that teachers of regular classes hold negative attitudes toward their gifted students (Jacobs, 1972; Smidchens and Sellin, 1976). Smidchens and Sellin further noted that teachers of regular classes were especially negative in their attitudes toward the need for special education programs for the gifted.

Though Gallagher, Aschner, and Jenne (1967) extensively studied classroom interaction in a program for the gifted, no attempt was made to link the results to attitude. In addition to criticizing the observational instruments used in this study, Gallagher reported a large degree of variance in the cognitive level of teachers questions across classrooms. Because of the questions raised in the literature concerning variance in teacher attitude toward gifted students in the cognitive level of teacher questions in the classroom, a central question in the present study was: To what extent are teachers' expressed attitudes toward gifted children related to the cognitive level of the questions asked in their classrooms? Magary and Freehill (1975) have suggested that the two elements should complement each other, since both attitude and a capability to ask significant questions are essential in a teacher's approach to the gifted child. Another relevant question to be addressed was: What are the factors that can be extracted from an attitude instrument designed to measure several areas of attitude toward gifted children? It is evident that more extensive research is needed to perfect the available instruments and constructs that deal with teachers' attitudes and behaviors toward gifted children.

The purpose of this study was to develop and to pilot written and observational instruments and to investigate the relationships between the attitudes and behaviors toward gifted children among teachers of the gifted and teachers of regular classes.

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Hypotheses

The statistical hypotheses of the present study, stated in null form, were tested at alpha = .05:

H_1 - There is no significant positive correlation between teachers's attitudes toward the gifted and the combined observed percentage of their classroom questions directed toward comprehension, application, analysis, synthesis, or evaluation behaviors.

H_2 - There is no significant difference in the attitudes toward gifted

children among teachers of regular classes and teachers of the gifted.

H_3 - The cognitive levels of classroom questions asked by teachers of regular classes are equal to or higher than those asked by the teachers of the gifted.

Sample

The subjects of the research consisted of 13 teachers of the gifted in a large, metropolitan school district in the Southeast and 25 pre-service and in-service teachers of regular classes in the same school district. The teachers of the gifted represented 52% of the resource specialists in the district who worked with gifted children, and the 25 teachers of regular classes consisted of both pre-service and in-service educators. The teachers of regular classes, all of whom were enrolled in a private university teaching program, represented 100% of the undergraduate pre-service teachers (n = 11), and their field supervisors (n = 11), as well as two randomly selected graduate level pre-service teachers and one of their supervisors. Since all of the teachers of the gifted in the school district (N = 25) were mailed questionnaires, the 13 teachers who responded represented a volunteer sample.

All of the in-service sample were white, female teachers, 32% holding Bachelor level degrees; 56% holding Masters level degrees; and 12% holding six-year degrees. Most of the respondents taught in primarily white, middle class schools.

Research Design and Procedures

Design

A Likert-type attitude scale (see Appendix #1), developed for the present study, was used to contrast the attitudes toward gifted children held by teachers of regular classes and teachers of the gifted. All of the teachers participating in the study (N = 38) completed this instrument. After the written instruments were returned, attitude toward gifted children constituted the independent variable of the research. Classroom observations of the cognitive level of teachers' questions were treated as the dependent variable. The purpose of this design was to determine if the teachers' attitudes toward gifted children were significantly related to the cognitive level of questions asked by the instructors in the classrooms. The classroom observations were also used to contrast the levels of questions asked by teachers of the gifted and the pre-service teachers of regular classes.

Procedure

A random sample of six teachers was drawn for classroom observations to measure the cognitive level of their classroom questions. The sample was stratified by regular/gifted class x grade level (4-5; 6-7) x content area (Verbal or quantitative). Each teacher was observed on two unannounced days, teaching the same class and the same subject. Four trained coders worked independently in coding the tape recorded observations. The observations were made during a three week period during Spring, 1978.

Findings and Conclusions

Attitude Scale

Through a principal component analysis (with varimax rotation), four homogeneous sub-scales were delineated from the Likert-type attitude scale developed for the present study:

Factor 1: Classroom Orientation - The role of the gifted student in terms of classroom contribution and social interactions with peers. (Items 1, 3, 4) $\bar{X}$ Regular Teachers = 12.40; $\bar{X}$ Gifted Teachers = 13.92. (Note: A high score indicates a positive attitude)

Factor 2: Introspective Orientation - The role of creativity in the gifted student's perceived degree of "absentmindedness." (Items 7, 8) $\bar{X}$ Regular Teachers = 7.40; $\bar{X}$ Gifted Teachers = 6.61.

Factor 3: Special Education Function - The need for special educational programs for the gifted in terms of perceived intellectual and social benefit, including the general social contribution of the gifted student in the classroom. (Items 2, 15, 16, 17) $\bar{X}$ Regular Teachers = 13.52; $\bar{X}$ Gifted Teachers = 17.77.

Factor 4: Creative Orientation - The role of creativity in the gifted child's adaptive, cognitive, and affective behaviors. (Items 9, 10, 11, 12) $\bar{X}$ Regular Teachers = 13.02; $\bar{X}$ Gifted Teachers = 10.61.

The test-retest reliability of the instrument was 0.74. The coding instrument for cognitive level of teacher questions appeared to facilitate high inter-coder reliability (0.92), despite a lack of specified teacher instructional objectives and transcription of the tapes.

Relationship of Attitude and Questions

It appeared that the level of questions the teachers asked in their classroom was not a function of their attitudes toward gifted students (see Table #1).

Although there was a relationship between the teachers' attitude toward Special Education Programs for gifted children and the level of questions they asked in their classrooms (r = .89; t = 3.92), this relationship appeared to be confounded by the methodology of this study. The null hypothesis (H_1), which stated that there would be no positive relationship (alpha = .05) between teachers' attitudes toward the gifted and higher level questions asked by the teacher in the classroom, was accepted. Future research might investigate the relationship between teacher attitudes and teacher-student interaction. Perhaps level of question is an indirect measure of the interactive process between teacher and student which may be influenced by attitude.

Table #1

Summary Data for the Relationship Between
Attitude and Teaching Behavior

	Scale $\bar{X}/s$		% Knowledge Questions $\bar{X}/s$		Correlation	t - Value of Slope
Factor 1 (3 Items)	12.50	3.39	42.83	19.65	.73(NS)	2.31(NS)
Factor 2 (2 Items)	7.50	1.23	42.83	19.65	.12(NS)	0.24(NS)
Factor 3 (4 Items)	15.33	3.78	42.83	19.65	.89*	3.92*
Factor 4 (4 Items)	12.67	2.73	42.83	19.65	-.47(NS)	-0.55(NS)

* p .05

Teacher Attitudes Toward Gifted Children

There were no significant differences (alpha = .05) in attitude between the two groups of teachers on Factor 1 (Classroom Orientation; t = -1.72), Factor 2 (Introspective Orientation; t = 1.21), or Factor 4 (Creative Orientation; t = 1.65). A significant difference in factor scores did, however, emerge on Factor 3 (Special Education Function; t = -3.54). These data suggested that the two groups of teachers held similar attitudes toward the gifted child, but the teachers of the gifted were more in favor of special education programs for the gifted. This result supported Smidchens and Sellin's (1976) conclusion that teachers of regular classes perceived the gifted as "desirable to teach, but who have no special needs for service."

The null hypothesis (H_2), which stated that there would be no difference in attitude toward gifted children between the two groups of teachers, was accepted.

Cognitive Level of Teacher Questions in the Classroom

Another relevant finding of this research was that teachers of the gifted asked significantly (alpha = .05) higher levels of classroom questions in the cognitive domain than did the teachers of regular classes (Regular Teachers: Knowledge = 67%, Comprehension = 14%, Application = 11%, Analysis = 6%, Evaluation = 2%; Gifted Teachers: Knowledge = 37%, Comprehension = 21%, Application = 13%, Analysis = 17%, Synthesis = 8%, Evaluation = 4%; Chi Square = 49.61). The difference was most pronounced in the frequent use (67%) of knowledge questions asked by the regular classroom teachers.

The null hypothesis (H_3), which stated that the cognitive levels of

questions asked by teachers of regular classes are equal to or higher than those asked by teachers of the gifted, was rejected. The alternative hypothesis was accepted. Teachers of the gifted asked a significantly (alpha = .05) greater proportion of higher-level classroom questions than did the teachers of regular classes.

These results were especially contrary to expectation since both groups of teachers had been previously trained to use higher-level questions. It appeared that the teachers' perception of student ability was a pervasive mechanism of teaching behavior.

Although the teachers of the gifted appeared to ask intellectually stimulating questions, it should be the role of future research to investigate what effect this environment had on student outcome. While positive attitudes and higher-level questions are generally associated with higher student achievement (Ryan, 1973), this study cannot offer empirical evidence to support this claim. Quantification of cognitive levels of classroom questions asked by the teacher may only begin to approximate the quality of the educational environment in terms of student outcome.

Appendix #1

Likert-Type Attitude Scale

Directions: The following instrument is designed to obtain information relative to the way people feel about giftedness and gifted children. There are no right or wrong answers, but rather a group of statements with which you agree or disagree. Following each statement, please circle one of the responses to show the extent of your agreement or disagreement with what is said. "SA" means Strongly Agree; "A" means Agree; "U" means Undecided; "D" means Disagree; and "SD" means Strongly Disagree.

				Factor
1.	Gifted Children considerably add to the learning environment in the classroom. (Positive)	SA A U D SD		1
2.	Gifted Children considerably add to the social climate of the classroom. (Positive)	SA A U D SD		3
3.	The gifted child does not contribute much to class discussions. (Negative)	SA A U D SD		1
4.	The gifted child seldom positively interacts with the other children in the class. (Negative)	SA A U D SD		1
5.	Gifted children usually enjoy the work that is given to them. (Positive)	SA A U D SD		N/C*
6.	Gifted children should play with other children like themselves. (Negative)	SA A U D SD		N/C

			Factor
7.	Creatively gifted students tend to be absent-minded. (Negative)	SA A U D SD	2
8.	Gifted children who are not creative tend to be absent-minded. (Negative)	SA A U D SD	2
9.	Creatively gifted children are more adaptable than non-creative children. (Negative)	SA A U D SD	4
10.	Creatively gifted children are more clever than non-creatively gifted children. (Negative)	SA A U D SD	4
11.	Creatively gifted children are more independent than non-creatively gifted children. (Negative)	SA A U D SD	4
12.	The creatively gifted are more enthusistic than the non-creatively gifted children. (Negative)	SA A U D SD	4
13.	Creatively gifted students are intelligent. (Positive)	SA A U D SD	N/C
14.	Gifted students who do not demonstrate a high degree of creativity are still intelligent. (Positive)	SA A U D SD	N/C
15.	Special classes for gifted students positively affect the students academically. (Positive)	SA A U D SD	3
16.	Special classes for gifted students positively affect the students socially. (Positive)	SA A U D SD	3
17.	Special classes for gifted learners provide what cannot be provided in the regular classroom. (Positive)	SA A U D SD	3

*N/C = Not Classified as a Factor

Note: Each item was scored from 1 - 5 according to the direction of the attitude expressed. The most positive response (i.e., "SA" on a Positive item or "SD" on a Negative item) was assigned a "5". Thus, a high score indicates a positive attitude.

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THE JUNIOR HIGH TEACHER AS A CLASSROOM EVALUATOR

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ALthough it is assumed all teachers function as classroom evaluators, little effort has been directed to the identification of the measurement and evaluation skills actually used by the classroom teacher. As public demands for educational accountability in the schools have increased, criticism has been directed at the methods of evaluating educational outcomes (Dareshori, 1977; McKenna, 1977). Increasingly, the classroom teacher has been asked to provide evidence, from his/her own measurement and evaluation practices, which demonstrates student growth and achievement (Quinto, 1978).

Two factors appear to contribute to the practices of teachers as classroom evaluators, the components of the training program and the specific situational demands of the position. An examination of the preparation of teachers in the area of measurement and evaluation provides little assurance of the assumption of evaluation competency. In 1963, of 248 NCATE accredited institutions, only 50 (20%) required any type of measurement and evaluation course for their teacher education graduates (Humphry, 1963). A 1967 study by Goslin reported 25% of a sample of elementary teachers and 20% of the secondary teachers sampled had taken no course work related to educational measurement. In a more recent study by Roeder (1974), over half (57.6%) of some 916 institutions having accredited elementary education programs did not require any evaluation courses for their graduates.

The large majority of junior high teachers have been trained as senior high or elementary educators (Klingele, 1973). As previously indicated, the evaluation preparation of these teachers has been meager. Therefore, it may be assumed the junior high teacher has received no training different from the other teaching levels.

However, the junior high teacher has long been recognized as an important component of the education of the early adolsecent (Krinsky and Pumerantz, 1972). While the organizational patterns for the intermediate years of schooling have changed, the need for teachers possessing an understanding of the transitional nature of this period is well established (Armstrong, 1977). However, preparation for the unique requirements of this transitional teaching responsibility has long been neglected (Klingele, 1973; Atkins, 1968).

Hence, the purpose of this study was two-fold. First, it was designed to gather descriptive information regarding the measurement and evaluation skills actually utilized by the junior high teacher. Secondly, accepting the assumption of the transitional nature of the junior high period, the study sought to identify those differences between elementary, junior, and senior high teachers which would not be accounted for by differences in teacher preparation programs, but rather are reflective of an awareness of the unique demands of this teaching level.

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Methodology

Teachers participating in the study were randomly selected from a listing from the Iowa Department of Public Information. Each of the original 750 teachers identified were asked to complete a questionnaire designed to assess the usefulness of various measurement and evaluation competencies to the classroom teacher. Three hundred eighty-five teachers completed the questionnaire, of which 188 (49%) were elementary, 74 (19%) junior high, and 123 (32%) senior high.

The questionnaire consisted of forty-one statements, each of which described a measurement and evaluation competency a classroom teacher might use. Responses were made on a five point scale where "1" indicated an unnecessary and unused skill and "5" indicated a skill which was valuable and frequently used. An additional scale point, "U" was available for each item if the responder was unfamiliar with the competency described. Teachers were asked to respond to each competency description as to their perception of the value of the skill to them personally in their classroom responsibilities.

The results of the survey were analyzed by individual items as well as by clusters of items related to general measurement and evaluation topics. In both the individual and cluster analyses, mean responses and standard deviations were obtained. An examination of response profiles for individual items identified the most and least valuable skills as well as competencies with which the teachers were unfamiliar. Elementary, junior, and senior high teachers were compared on item clusters utilizing t-tests for independent means.

Results

Table #1 summarizes the five measurement and evaluation competencies junior high teachers found most desirable and used most frequently in their classroom responsibilities. Mean responses and standard deviations are indicated for these individual items for the junior high sample as well as the elementary and secondary teachers. Table #1 also reflects the rank order of these competencies by teaching level.

Table #2 summarizes the five measurement and evaluation competencies junior high teachers found least desirable and unused. As in Table #1, mean responses, standard deviations, and rank orders are presented by teaching level.

The perceptions of junior high, elementary, and senior high teachers were compared on item clusters related to general measurement and evaluation topics. These comparisons are presented in Table #3. Significant differences in the utilization of skills related to standardized tests and their interpretation were found between elementary teachers and both junior high and senior high teachers.

An examination of the item profiles revealed only one competency, building the test plan or blueprint, as unfamiliar to more than 20% of the survey participants. Twenty-nine of the forty-one competencies were unfamiliar to less than 10% of the teachers.

Table #1

Most Desirable and Frequently Used Measurement and Evaluation Competencies of Junior High Teachers

Measurement and Evaluation Competency	Junior High			Elementary			Senior High		
	Mean Response	S.D.	Rank	Mean Response	S.D.	Rank	Mean Response	S.D.	Rank
Conduct an effective teacher-student conference	4.412	0.925	1	4.299	1.142	3	4.409	0.972	1
Conduct an effective teacher-parent conference	4.382	0.853	2.5	4.612	0.797	1	4.273	0.973	3
Construct effective instruments to guide instruction such as worksheets, academic games or puzzles, audio-visual evaluation instruments, etc.	4.382	1.074	2.5	4.338	0.924	2	4.045	1.180	4
Construct an acceptable objective test (alternate-response, multiple choice, matching, completion, problem items) including appropriate directions, test arrangement and scoring keys	4.242	1.119	4	3.403	1.336	14	4.318	0.934	2
State practical uses of evaluation instruments which are designed to measure student achievement and guide instruction	3.677	1.275	5	3.529	1.152	12	3.667	1.119	8

Table #2

Least Desirable and Unused Measurement and Evaluation Competencies of Junior High Teachers

Measurement and Evaluation Competency	Junior High			Elementary			Senior High		
	Mean Response	S.D.	Rank	Mean Response	S.D.	Rank	Mean Response	S.D.	Rank
Calculate and interpret a correlation coefficient as a measure of relationship between two sets of scores	1.571	0.959	41	1.839	1.041	40	2.057	1.110	37
Interpret an individual's score utilizing the standard error of measurement	1.833	0.834	40	2.571	1.277	31	2.000	1.291	38
Given a set of student scores, construct a histogram (bar graph) to represent the scores	1.839	0.860	39	1.967	1.178	39	1.784	1.109	41
Calculate and interpret measures of variability (including range, quartile deviation, and standard deviation	1.867	0.860	38	1.804	1.069	41	2.282	1.169	36
Construct, administer, and interpret a sociogram for a group of students	2.042	1.197	37	2.948	1.369	24	1.892	0.966	40

Table #3

Measurement and Evaluation Competencies of Junior High, Elementary and Senior High Teachers in Topical Areas

Topical Areas	I Junior High $\bar{X}$	I Junior High S.D.	II Elementary $\bar{X}$	II Elementary S.D.	III Senior High $\bar{X}$	III Senior High S.D.	Significant Differences t-test at the .05 level
Measurement Purposes and Functions: assessment for varying purposes	3.400	1.041	3.554	1.043	3.395	1.001	
Measurement Concepts: validity, reliability, and usability	3.273	1.126	3.016	1.133	2.325	0.994	
Instructional Objectives and Planning: measurable objectives and planning	3.269	1.079	3.191	.851	3.405	0.865	
Construction of Evaluation Instruments: cognitive, affective and psychomotor	3.263	0.806	3.132	.811	3.182	0.808	
Statistical Analysis and Interpretation: administration and utilization of standardized evaluation	2.185	0.834	2.125	.890	2.394	1.029	
Grading: various approaches to grading and reporting	3.000	1.146	2.741	1.136	2.395	0.953	

Table #3 (Cont'd.)

Topical Areas	I Junior High $\bar{X}$	I Junior High S.D.	II Elementary $\bar{X}$	II Elementary S.D.	III Senior High $\bar{X}$	III Senior High S.D.	Significant Differences t-test at the .05 level
Standardized Tests and Interpretation: administration and utilization of standardized evaluation	2.880	0.927	3.580	1.052	2.606	1.116	I-II, II-III
Communicating Evaluation Information: conducting effective conferences	4.000	0.696	4.000	.866	3.318	0.971	
	N = 74		N = 188		N = 123		

Discussion

An examination of the most and least desirable measurement and evaluation competencies, Tables #1 and #2, indicates junior high teachers place high value on the communication of evaluation information, both to parents and students. It is interesting to note junior and senior high teachers rank the effective teacher-student conference first, while the elementary teachers identified the teacher-parent conference as most valuable. If, as has been suggested in the literature, the junior high is to serve as a period for developing greater student responsibility and self-evaluation then this finding would support the junior high teacher beginning the development of this process. It is also apparent junior and senior high teachers are much more similar in terms of their perception of the value of the objective test. This would suggest a movement toward the more summative focus of the senior high school. Finally, junior high teachers appear to be concerned with both student achievement and instructional guidance. This suggests both a summative and formative concern in the evaluation process.

The skills found to be least valuable are similarly perceived by teachers at all levels of teaching. These skills, namely those involved with the statistical analysis and interpretation of test information were generally perceived as unnecessary and rarely used competencies. In one competency area, that of interpretation of an individual's score utilizing the standard error of measurement, the lack of usefulness of this skill suggests the accuracy of test information being communicated may be open to question. It is also interesting to note the lack of usefulness of the sociogram for the junior high teacher, a finding parallel with that of senior high teachers. In as much as the junior high transitional period is extremely important with regard to affective dimensions and peer group involvement, this may suggest the junior high teacher is failing to use an evaluation tool which might prove very useful in identifying the dynamics of the classroom.

In comparing junior high, elementary, and senior high teacher perceptions of competencies in topical areas, significant differences are noted only in the area of standardized tests and their interpretation. Differences were evident between junior high and elementary teachers, as well as elementary and senior high educators. ALthough standardized test information may be less accessible to the junior high teacher, this information may be of value in helping the adolescent to develop realistic perceptions of his/her abilities and achievements. In this sense standardized test information shifts from a diagnostic and summative tool at the elementary level to a guidance tool through the junior high period.

The results of the study indicate an interesting paradox. It appears the junior high teacher does perceive a need for multiple assessment approaches and uses a balanced approach of formative and summative assessment. In addition, teachers value and use skills related to cumulative folder information, standardized test interpretation, and norm-referenced classroom evaluation. However, they do not find useful the statistical tools used to interpret accurately the information. Thus, while these varied evaluation techniques are being utilized, the analysis of the information gained appears to be minimal

Because of the nature of the junior high school experience, it is

essential that junior high teachers possess the evaluation competencies of both the elementary and the senior high teacher. While current teacher education programs are attempting to increase the variety of instructional approaches available to the junior high teacher, there is also a need to extend that exposure to a variety of assessment approaches. The survey suggests a need for good pre-service teacher preparation in the measurement and evaluation area, as well as the in-service upgrading of junior high teacher assessment skills, particularly in the utilization of statistical techniques. The junior high teacher has already recognized the need to use a balance of formative and summative evaluation techniques in this transitional period of the junior high age. It is essential they receive the training necessary to do these evalution tasks completely.

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THE CURRENT STATUS OF OHIO MIDDLE SCHOOLS IMPLEMENTATION OF EIGHTEEN MIDDLE SCHOOL CHARACTERISTICS

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Introduction

Educators have recognized the educational needs of pre-adolescents and early adolescents for some time. From around 1910 until approximately 1965 the junior high school reigned as first the innovative, and then the established educational organization for students in transition from childhood to adolescence. Following World War II, a growing number of parents and educators became concerned about the tendency of the junior high school to copy practices of the senior high school, thus forcing children to grow up too fast. In addition to this dissatisfaction, other key issues used to justify the middle school were changes in maturation levels, demands of a modern urbanized society, the effects of technology and changes in the basic family structure.

While organizational patterns other than the traditional seven through nine junior high school had existed prior to the 1960's, it was during this decade that the middle school concept grew to become the middle school movement. Middle schools began springing up across the country. Alexander (1968) reported 1101 middle schools operating in the United States. Kealy (1970) found 2298 middle schools, and Compton (1974) reported 3723 middle school in the United States.

Coinciding with the growth in the number of middle schools was a growth in the number of books, middle school journals, articles, conferences and workshops pertaining to the middle school concept and the basic characteristics of middle school programs. Georgiady, Riegle, and Romano (1973) have developed a list of eighteen characteristics that are commonly accepted by middle school educators as being important in planning, implementing, and evaluating middle school programs designed to meet the unique needs of transescents. The list of characteristics includes continuous progress, multi-material approach, flexible schedules, social experiences, physical experiences, intramural activities, team teaching, planned gradualism, exploratory enrichment experiences, guidance services, independent study, basic learning skills, creative experiences, student security factors, evaluation practices, community relations, student services, and auxiliary staffing.

In Ohio, the increase in the number of middle schools has been even more phenomenal than in the United States when one considers that Alexander (1968) found only three middle schools in Ohio in his study. By 1974, in Compton's study, there were 219 middle schools found in Ohio. Are these schools "real" middle schools in the sense that they operate programs that reflect the middle school concept? Have these schools been successful in implementing the eighteen characteristics listed above? This investigation was concerned with answering these questions.

EA 014 538

Statement of the Problem

The problem of this study was to determine the current level of implementation of certain middle school characteristics as perceived by principals of grades 6-8 and grades 5-8, or the equivalent, public schools in Ohio.

Survey of Literature

At present, the information is sparse concerning the level of implementation of the middle school concept. What evidence there is seems to indicate that there is a significant gap between the "ideal" middle school as outlined in the literature and accepted by theorists and practitioners, and actual programs now in operation. Alexander's (1968) national study of middle schools indicated a gap between the "ideal" program and operational programs. Later studies by Riegle (1971), Flynn (1971), Daniel (1973), Billings (1973), Franklin (1973), Bloom (1974), Raymer (1974), Kramer (1974), Phelps (1975), and Cummings (1975) seem to support this conclusion in the states of California, Georgia, Michigan, Pennsylvania, Texas, Virginia, and Wisconsin.

Design of the Study

This study involved all public schools in Ohio housing either grades 6-8 or grades 5-8. The study was based upon the principal's perception of the level of implementation of the eighteen middle school characteristics in their schools. It was assumed that the respondents were knowledgeable about the middle school characteristics and the level of implementation in their middle school.

The Ohio Educational Directory was consulted and 208 schools were selected which met the criteria of housing grades 6-8 or 5-8. A survey instrument seeking data related to the level of implementation being made of the eighteen middle school characteristics was mailed to the principals of the 208 schools housing either grades 6-8 or 5-8.

The total number of survey instruments returned was 169. Three survey instrument responses had to be discarded because they came from schools erroneously included in the list provided in the Ohio Educational Directory. The net total number of survey instruments which were accepted for this study was 166 of the 205 survey instruments distributed. Survey instruments were returned by 77.6% of the grades 6-8 public schools, and 87.3% of the grades 5-8 public schools for an overall 81% return.

Survey instruments returned were separated either into a group containing schools housing grades 6-8 or into a group containing schools housing grades 5-8. Mean scores, variances, and percentages of the maximum possible score yielded by the survey instrument were calculated on each characteristic for each group of schools. A ninteenth mean score and percentage were calculated for each group. Percentage scores made comparisons between the groups possible.

Summary of Findings

Objective #1: To measure the level of implementation of eighteen

validated middle school characteristics made by grades 6-8 public schools in Ohio. The total mean score of 185.4 compared to a maximum of 358 tended to indicate that the grades 6-8 public schools in Ohio have not implemented the basic middle school characteristics to a great degree. Extensive variation in the level of implementation of exploratory enrichment studies, guidance services, and intramural activities was evident. Low variance scores indicated a consistent level of implementation of planned gradualism, student services, auxiliary staffing, community relations, security factor, and continuous progress.

Objective #2: To measure the level of implementation of eighteen validated middle school characteristics made by grades 5-8 public schools in Ohio. The total mean score of 184.4, compared to a maximum of 382 tended to indicate that the grades 5-8 public schools in Ohio have not implemented the basic middle school characteristics to a great degree. Extensive variation in the level of implementation of intramural activities and guidance services was evident. Low variance scores indicated a consistent level of implementation of planned gradualism, student services, auxiliary staffing, community relations, security factor, flexible schedules, and continuous progress.

Objective #3: To compare the mean score of grades 6-8 public schools in Ohio with the scores that the measurement instrument would yield if all eighteen middle school characteristics were fully implemented. The mean total score of 185.4 achieved by the grades 6-8 public schools in Ohio compared to a possible maximum score of 358, represented a 51.8% level of implementation of the eighteen middle school characteristics. Multi-material approach, physical experiences, and student services were the characteristics with the highest level of implementation, while continuous progress, flexible schedules, team teaching, and exploratory enrichment studies were the characteristics with the lowest level of implementation.

Objective #4: To compare the mean scores of the grades 5-8 public schools in Ohio with the scores that the measurement instrument would yield if all eighteen middle school characteristics were fully implemented. The total mean score of 184.4 achieved by the grades 5-8 public schools in Ohio compared to a possible maximum score of 382, represented a 48.3% level of implementation of the eighteen basic middle school characteristics. Multi-material approach, physical experiences, and student services were the characteristics with the highest level of implementation, while continuous progress, flexible schedules, team teaching, and exploratory enrichment studies were the characteristics with the lowest level of implementation.

Objective #5: To compare the level of implementation of middle school characteristics made by grades 6-8 public schools in Ohio with the level of implementation of middle school characteristics made by grades 5-8 public schools in Ohio. Although the percentage of implementation of 51.8% for the grades 6-8 public schools was slightly higher than the percentage of implementation of 48.3 for the grades 5-8 public schools, both groups scored approximately half of the maximum possible score. Both groups recorded that multi-material approach, physical experiences, and student services were the characteristics with the highest level of implementation, while continuous progress, flexible schedules, team teaching and exploratory enrichment studies were the characteristics with the lowest level of

implementation. The only noticeable differences were in the more advanced implementation of team teaching and exploratory enrichment studies in grades 6-8 public schools and more advanced implementation of planned gradualism in grades 5-8 public schools.

Objective #6: To determine the current level of implementation of middle school practices as it relates to the defined basic characteristics of middle school education. The composite percentage score of 50.5% tended to indicate that grades 6-8 and grades 5-8 public schools in Ohio have not implemented the basic middle school characteristics to a great degree.

Table #1 summarizes the percentage of implementation for each of the eighteen characteristics for grades 6-8 schools, grades 5-8 schools and the composite of all schools.

Conclusions

Two major conclusions are supported by the findings of this study. First, in general, the grades 6-8 and grades 5-8 public schools in Ohio have not implemented the eighteen basic middle school characteristics to a great degree. The total composite score of 50.5%, which represents the average implementation for all grades 6-8 and grades 5-8 public schools in Ohio indicates that, in general, the eighteen middle school characteristics have not been implemented to a great degree. This conclusion is further supported by the following findings.

1. Only three middle school characteristics: multi-material approach, physical experiences, and student services, had composite percentage of implementation scores in the 65% to 80% range.

2. Four middle school characteristics: continuous progress, flexible schedules, team teaching, and exploratory enrichment studies, had composite percentage of implementation scores of 33% or less.

3. The remaining middle school characteristics: social experiences, intramurals activities, planned gradualism, guidance services, independent study, basic skills, creative experiences, security factor, evaluation, community relations, and auxiliary staffing had composite percentage scores between 37% and 56%.

Table #1

Characteristics	Grades 6-8 Schools	Grades 5-8 Schools	All Schools
A - Continuous progress	32.5	33.8	33.0
B - Multi-material approach	69.1	64.4	67.3
C - Flexible Schedules	31.8	26.5	29.8
D - Social Experiences	51.4	51.9	51.6
E - Physical Experiences	78.5	75.1	77.2

Table #1 (Cont'd.)

Characteristics	Grades 6-8 Schools	Grades 5-8 Schools	All Schools
F - Intramural Activities	57.1	51.1	54.9
G - Team Teaching	33.8	17.5	27.7
H - Planned Gradualism	43.3	50.0	45.8
I - Exploratory Enrichment Studies	31.4	22.3	28.0
J - Guidance Services	55.4	54.0	54.9
K - Independent Study	40.6	44.4	42.0
L - Basic Skills	55.9	55.2	55.6
M - Creative Experiences	42.9	36.7	40.6
N - Security Factor	51.3	53.8	52.2
O - Evaluation	48.4	48.8	48.6
P - Community Relations	46.7	41.3	44.7
Q - Student Services	72.2	67.8	70.6
R - Auxiliary Staffing	38.0	36.0	37.0
	51.8	48.3	50.5

Second, in general, whether a "middle school" houses three or four grades is not significantly related to the level of implementation of the eighteen middle school characteristics by grades 6-8 and 5-8 public schools in Ohio. Although the percentage of implementation of 51.8% for the grades 6-8 public schools was slightly higher than the percentage of implementation of 48.3 for grades 5-8 public schools, both scored approximately half of the maximum score possible. This conclusion is further supported by the fact that a comparison of the grades 6-8 public schools' percentage of implementation shows only small differences in 15 of the 18 basic middle school characteristics. The noticeable differences occurred in the implementation of the characteristics of team teaching, exploratory enrichment studies, and planned gradualism. The grades 6-8 public schools showed more advanced implementation of the characteristics of team teaching and exploratory enrichment studies, while the grades 5-8 public schools showed more advanced implementation of the characteristic of planned gradualism.

Why did noticeable differences between grades 6-8 public schools and grades 5-8 public schools occur in the implementation of the characteristics of team teaching, exploratory enrichment studies and planned gradualism? It appears that grades 5-8 public schools often treat grades 5-6 as one entity and grades 7-8 as another entity, whereas, grades 6-8 public schools consider grades 6-8 as one entity. This statement is supported by the following findings.

1. When asked to describe the organization of the school program, 58.2% of the grades 5-8 public schools reported that the program moved from largely self-contained to partially departmentalized or departmentalized whereas only 44% of the grades 6-8 public schools reported that the program moved from largely self-contained to partially departmentalized or departmentalized. Also, only 19.4% of the grades 5-8 public schools, compared to 30.2% of the grades 6-8 public schools reported having modified departmentalization for the entire grade span.

2. Only 16.1% of the grades 5-8 public schools offered a range of Related Arts courses for all grade levels, whereas, 39.4% of the grades 6-8 public schools offered a range of Related Arts courses. In addition, grades 5-8 public schools offered less Related Arts courses, an average of 3.9 courses as compared to 4.9 courses for the grades 6-8 public schools.

Since more self-contained programs are found in the grades 5-8 public schools, it seems that this is one of the crucial factors accounting for the difference in the level of implementation of team teaching.

In the past, as no information was available, one could only speculate how well "middle schools" in Ohio were implementing these eighteen characteristics. Through this study, empirical information has been obtained that provides indications as to how well the eighteen basic middle school characteristics are implemented in grades 6-8 and grades 5-8 public schools in Ohio. The levels of implementation reported in this study will retain some value over a period of time as reference points for other studies. The challenge facing middle school educators is to more extensively implement the basic characteristics in the middle schools throughout the country.

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ED214287

A COMPARISON OF THE ATTITUDES OF ELEMENTARY, MIDDLE AND HIGH SCHOOL TEACHERS

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Introduction

In the number of years this author has worked as a teacher, and with teachers in public schools, particularly of the middle grades, it has become apparent that teachers of grades 6, 7, and 8 seem to exhibit different concerns and attitudes towards their students than teachers of other grade levels. Although the existence of these differences has been clear to this author for some time, the direction and intensity of these attitudinal differences has not been clear at all. The function of the present study then is to examine the attitudes of teachers of the middle grades (for the present study grades 6, 7, and 8) and compare them, along with various dimensions, to those of teachers of other grade levels. With this data and subsequent analysis it should be possible to carefully describe the manner in which attitudes are different among teachers at various grade levels (along with obtaining hard evidence that they are in fact different), the extent of these differences, and possible explanations for these differences.

Procedure

Seventy-five graduates of the University of Cincinnati teacher education programs employed as teachers in the metropolitan Cincinnati area were selected at random as part of a follow-up study for the State of Ohio on recent teacher education graduates. All of the teachers selected had at least one year teaching experience at the level taught during the time of the data collection. The grade range covered by these teachers extended from grade 3 up to grade 12. As a result of incomplete follow-up data, two of the seventy-five teachers were dropped from the analysis. The remaining seventy-three teachers were asked in person to respond to the Minnesota Teacher Attitude Inventory (long form) in the late spring of 1977.

The MTAI is a 150 item Likert-scaled instrument which measures attitudes of teachers towards their students. Yee and Fruchter identified five distinct dimensions measured by the MTAI. Their five factor solution was utilized in this study because its validity has been extensively substantiated and because of the low subject to item ratio in this present study which was insufficient for the principle components analysis to be carried out. The five factors identified by Yee and Fruchter are:

1. Children's Irresponsible Tendencies and Lack of Self-Discipline
2. Conflict Between Teacher's and Pupil's Interests
3. Rigidity and Severity in Handling Pupils
4. Pupil's Independence in Learning
5. Pupil's Acquiescence to the Teacher

EA 014 539

For analysis purposes, the teachers' participation in the study were divided into three mutually exclusive groups:

1. Teachers of grades 3 to 5 (Elementary Grade Teachers - EGT)
2. Teachers of grades 6 to 8 (Middle Grade Teachers - MGT)
3. Teachers of Grades 9 to 12 (High School Teachers - HST)

It should be pointed out that many of the MGT's were teaching in a K-8 or 1-8 unit school and not in a separate middle school, per se.

Five factor scores were computed for each of the seventy-three participants using the MTAI scoring keys and the factors identified by Yee and Fruchter. The Multivariate Analysis of Variance package and the Statistical Package for the Social Sciences on the computer facilities in the Southwest Ohio Regional Computer Center was employed on this data.

Initially, a multivariate analysis of variance procedure was used to test the hypothesis whether teachers at different levels (EGT, MGT, and HST) differed significantly on attitude toward students as measured by the five MTAI factors. Secondly, a discriminant analysis was employed to determine which of the factors or dimensions identified by Yee and Fruchter provided the greatest amount of discrimination between the three groups. Finally, univariate F-tests were employed on the factors providing substantial discrimination.

Results

The results shown in Table #1 demonstrated no significant differences at the .05 level between EGT's, MGT's, and HST's on the five factor multivariate analysis of variance.

The discriminant analysis carried out next yielded only a single discriminant function as providing substantial discriminating power of the two functions extracted, so only the first function is reported below.

Table #1

Multivariate Analysis of Variance of the Five Factor MTAI Solution by Grade Level Taught

Source	F	Sig.
Grade Level	1.5207	.14

It is apparent from examining the function coefficients that the first two factors provided the substantive discrimination of the function. This function could therefore be called "Irresponsible Conflict Promoting Behavior by Students." The mean discriminant scores of the three groups indicate that teachers of grades 6, 7, and 8 in this sample tended to have more negative attitudes towards their students than teachers in the other two groups, particularly the High School Teachers. Middle Grade Teachers here

generally felt the students are more irresponsible and less interested in school work when compared to Elementary and High School Teachers. (See Table #2)

Table #2

Discriminant Analysis of the Five Factors by Grade Level Taught

Standardized Discriminant Function Coefficients:	
Factor 1	.81
Factor 2	.71
Factor 3	-.20
Factor 4	-.26
Factor 5	-.20

Table #3

Discriminant Score Means of the Three Groups	
Group	Mean
EGT	-.05
MGT	.59
HST	-.53

Since only the first two factors provided the substantial discrimination power, univariate F-tests were run on these factors individually to test differences by group. (See Table #4) As reported in the table, Factor 1, Children's Irresponsible Tendencies and Lack of Self-Discipline, was significant at the .05 level.

Table #4

Analysis of Variance of Factor One By Grade Level Taught

Source	DF	M.Sq.	F	Sig.
Grade Level	2	313.4	3.9	.025
Residual	71	81.3		

A post hoc Scheffe test was run on this data to determine the direction of the group differences. From the results shown in Table #5, it can be seen that MGT's scored significantly higher ($p < .05$) than HST's on this factor and scored somewhat higher than EGT's.

Table #5

Scheffe Test -- Groups Differing on
Factor One at .05 Level

Homogeneous Subsets:		
Subset 1		
Group	HST	EGT
Mean	1.66	4.75
Subset 2		
Group	EGT	MGT
Mean	4.73	9.00

This is a negatively worded factor where a high score means teachers feel children tend to be irresponsible and lack appropriate self-discipline. Therefore. teachers of the middle grades tend to have more negative feelings regarding responsibility of their students than do elementary or high school teachers especially.

The results from Factor 2, "Conflict Between Teacher's and Pupils' Interests," shown in Table #6, were close enough to significance ($p < .06$) to warrant further examination.

Table #6

Analysis of Variance of Factor Two
By Grade Level Taught

Source	DF	M.Sq.	F	Sig.
Grade Level	2	128.3	4.97	.01
Residual	71	25.8		

A post hoc Scheffe test yielded the MGT's achieved a higher score on this factor than either of the other two groups. The MGT's were significantly higher than the HST's ($p < .05$).

Table #7

Scheffe Test -- Groups Differing On
Factor Two at .05 Level

Homogeneous Subsets:		
Subset 1		
Group	HST	EGT
Mean	-1.48	-.04
Subset 2		
Group	EGT	MGT
Mean	-.04	3.13

This is again a negatively stated factor where a high score indicates teachers believe that pupils' interests often do not coincide with the teachers' interests. Therefore, teachers of the middle grades tend to believe their own students' interests were more often at cross purposes with the schools' interests than did teachers of other grade levels.

The remaining data from the last three factors is reported here for description purposes only. Only data from the MGT's was inferentially tested.

A high score on Factor 3 indicates a tendency toward strictness in the handling of students in the classroom. Not surprisingly, all three groups scored high. The MGT's were significantly higher than zero (the neutral score) at the .05 level.

Table #8

T-Test Comparing MGT Score on Factor 3 to 0

MGT Score	s	DF	t	Sig. (2-tail)
4.30	4.60	72	8.00	.01

Middle Grade Teachers tended to agree that children should be handled firmly. This result is fairly consistent overall with the beliefs of Middle Grade Teachers reported on the first two factors.

Factor 4, "Pupils' Independence in Learning," is substantially different from the preceding three factors. It is a positively worded factor in that it tends to describe an attitude that students are creative individuals who can utilize a large amount of freedom toward useful ends. The results indicate that all groups tended to have neutral beliefs with

respect to pupils' ability to handle independence. All three groups supported the status quo. This indicates that the teachers in this study feel reasonably satisfied with the structure of their schools with respect to pupil independence. Since virtually all of the schools used in this sample were rather traditional in structure, ideas of Holt and Goodman, for example, would have difficulty in getting substantial support from these teachers at this time.

Table #9

T-Test Comparing MGT Score on Factor 4 to 0

MGT Score	s	DF	t	Sig. (2-tail)
.39	3.17	72	1.05	.30

Factor 5 describes the extent in which teachers believe students tend to be obedient and have consideration for their teachers when undertaking actions in the classroom.

Table #10

T-Test Comparing MGT Score on Factor 5 to 0

MGT Score	s	DF	t	Sig. (2-tail)
1.61	3.17	72	4.33	.01

MGT's felt that their students generally were cooperative with their teachers.

Discussion

The data seems to demonstrate some differences in attitude between Middle Grade Teachers and teachers of other grade levels, particularly High School Teachers. The results from Factors 1 and 2 indicate that present Middle Grade Teachers used in this study tended to have a more negative feeling regarding their students' abilities to assume responsibility and function maturely in the classroom. Two possible explanations as to why Middle Grade Teachers feel much more strongly on this subject than High School Teachers come to mind.

The first is that high school students are simply more responsible and willing to go along with the teacher's wishes. After all, high school students have been part of the socializing school process somewhat longer than middle grade level students; in addition, many students who cannot seem to cope in the classroom and tend to cause distractions which disturb the teacher drop out of the schooling process after completing the middle

grades. These students who annoyed, and in some cases terrorized their middle school teachers are no longer part of the "system" well into high school; finally, students at middle grade levels are going through physical changes that can have substantial effects on behavior patterns. After passing through puberty, student behavior can settle down. Some of the severest discipline problems this author experienced while teaching 8th grade were reported to be good students in high school.

The second explanation is that teachers of the middle grades often come from the ranks of the high school teacher. That is, they were trained to be high school teachers. There is a misguided feeling by parents, administrators, and often students and teachers that teachers are "promoted" by giving them a higher grade to teach. Hence, there is a greater status attached to teaching a higher grade than a lower grade. Consider, for example, the designation, "Junior High School" as a designate for many middle grade level schools. It is as if the junior high school was merely a scaled down imitation of the real thing, the "Senior High School." Bombarded with this propaganda, many middle grade level teachers are often envious of their high school counterparts and jump at the opportunity to teach at a higher grade level. The middle grades, therefore, become sort of a proving ground or waiting area for prospective high school teachers. The effect is obvious. Poor teachers and unproven teachers, who often have more negative attitudes toward students, stay in the middle grades. The better teachers often move to the high school. In addition, most of the middle grade teachers received their teacher training in a secondary education program which often meant teacher education classes, practicums, and student teaching experiences were often geared to the teaching of the high school student. The younger, middle grade level students just do not measure up academically with the students the teachers have been "trained on." Thus, these teachers must readjust their academic expectations downward, probably forcing a concommitant decline in attitudes toward their students. In other words, these teachers expect their students to perform like miniature high school students and when they do not, the teachers' attitudes toward their students drop and students are accused of being lazy, irresponsible, or just not interested in anything, including school work.

Further research should test the viability of these possible explanations of the results of this experiment. Then we may have a better indication as to why middle grade teachers feel the way they do towards their students and potential areas where in-service and pre-service training might be modified to effect positive changes in these teachers.

ED214288

A STUDY OF THE PERCEPTIONS OF PERFORMANCE SKILLS OF MIDDLE SCHOOL PRINCIPALS BY SELECTED TEACHERS AND PRINCIPALS

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Much attention has been devoted to the evaluation of teachers in identifying their competencies and attitudes. Numerous school systems now have some type of formal teacher evaluation program. If teacher evaluation is important in identifying competencies for the learning process in the classroom, then it follows that principal evaluation to establish competencies and attitudes is also important, since the principal is responsible for the learning process in the entire middle school. It can be argued that identification and evaluation of performance skills for principals has become imperative for educators (Bobroff, 1974).

Though several research efforts have been undertaken to pinpoint the skills essential for effective leadership by a principal at the middle school level, these studies have typically surveyed principals to capture their perceptions of what they do or of what they should do (Brown, 1978). It is rare to ask educators what principals do and what principals should do as part of the same study. Though it could be assumed that what is done and what should be done is the same, it is our contention that this is a hasty assumption. This is a serious gap in the literature.

There is a second research flaw regarding the performance of principals that is even more serious. It has been commonly assumed that teachers and principals think differently about the performance of a principal. However, the extent to which the perceptions of principals and teachers do differ, if at all, has not been documented. It is assumed by these researchers that the perceptions of the way a principal should perform has an impact on the school environment and the interactions between people in this environment. Therefore, this area deserves careful study.

Hypotheses

This study was designed to test the following hypotheses:

1. There is a significant difference between middle school principals' perceptions of identified performance skills that are practiced and that should be practiced by middle school principals.

2. There is a significant difference between the middle school teachers' perceptions of identified performance skills that are practiced and that should be practiced by the middle school principals.

3. There is a significant difference between the perceptions of middle school teachers and principals of the identified performance skills that are practiced by the middle school principals.

4. There is a significant difference between the perceptions of middle school teachers and principals of the identified performance skills that should be practiced by middle school principals.

EA 014 540

Population

The population in the study was stratified to include a balanced representation of urban and rural middle schools. A total of twenty-four schools were selected at random from these two strata and both the principals and teachers were surveyed utilizing the same instrument. The results were developed, based on the aggregated responses of the principals and the aggregated responses of the teachers on each item. Twenty-three of twenty-four principals returned the survey, and 440 of 822 teachers responded.

Procedures

1. Through an extensive review of the literature, 37 skills were identified and organized into the three skill categories of administrative leadership, instructional leadership, and interpersonal skills. These skills were then embedded in a questionnaire that was used to survey the teachers and principals in the 24 schools.

2. Selected, nationally prominent, middle school educators were identified to form a jury to evaluate the skill statements and react to the validity of the instrument. Their suggestions were considered in finalizing the performance skill statements in the questionnaire.

3. The draft of the instrument was then evaluated by selected middle school principals and teachers to determine its reliability.

4. The questionnaire was then mailed to the 24 principals and 822 teachers in the stratified, random sampling.

Analysis Techniques

For each hypothesis, 37 dependent variables were tested -- one each, corresponding to each item on the Middle School Principal's Performance Questionnaire. These variables were operationalized as scores on a five-level Likert-like summative scale, anchored at the extremes. Such data were measured at the ordinal scale of measurement. The dependent variable is interval-scale; thus, the dependent t-test was appropriate for the hypotheses.

Data and Conclusions

The skills addressed in the survey are listed below according to the three categories -- instructional leadership, administrative services, and interpersonal relationships. The numbers listed in the tables coincide with the numbered statements by the categories that follow. The middle school principal acts as an instructional leader when he: (1) promotes staff effectiveness and student learning, (2) provides effective programs of faculty orientation, (3) provides systematic and effective supervision, (4) gives direction to continuing evaluation, (5) develops and maintains an "atmosphere" or "climate" which generates a balance between freedom and structure, (6) provides for curricular experiences, (7) secures staff involvement in curriculum development, (8) encourages teachers to help children develop realistic and positive self-concept, (9) encourages the staff to use diagnostic, remedial, and enrichment procedures, (10) establishes procedures

for developing a high level of positive student behavior, (11) consistently works to provide appropriate educational opportunities, and (12) encourages professional growth.

The middle school principal performs administrative service skills when he: (1) contributes to the definition and clarification of educational goals and objectives, (2) promotes leadership in the development of the total school curriculum, (3) promotes the use of the human and material resources of the community, (4) develops skillful techniques in selecting and assigning personnel, (5) defines and clarifies responsibilities for all employees, (6) handles confidential information ethically, (7) provides adequate time for instructional and administrative staff, (8) accepts responsibility for the evaluation of staff competence, (9) uses systematic and effective evaluation for the middle school, (10) assumes management responsibilities for the school plant, (11) assumes responsibility for the completion of reports, records, and written communications, (12) assumes responsibility for developing and implementation of necessary schedules, (13) exercises his authority appropriately to fulfill the responsibilities of his position, and (14) makes administrative decisions involving faculty members.

The interpersonal relationship skills of the middle school principal are performed when he: (1) demonstrates an appreciation of the civic responsibilities, (2) contributes to the development of professional standards, (3) reflects a philosophy which is consistently responsive to the changing demands of education, (4) communicates with formal and informal groups, (5) uses written communication to staff members, (6) utilizes faculty meetings appropriately, (7) utilizes committees, (8) implements change in such a way that there is majority agreement, (9) communicates effectively with teachers, (10) communicates effectively with students, and (11) communicates effectively with parents.

The analysis of the findings reveal that the data on Hypothesis 1, identified in Table #1, give evidence that a majority (24 of 37) 64.8%, of the performance skills are perceived in a significantly different manner by the principals when comparing those skills that are practiced with those skills that should be practiced. Furthermore, all but one of the skills ranked higher in the "should be practiced" column than in the "practiced" column. The data also gives evidence that a majority of the performance skills that are practiced are those that should be practiced. According to the data presented here, the principals are not practicing what they perceive they should be practicing in a majority of the skills recommended, with a very strong difference in certain skills. The findings of this study clearly indicate that the principals are not practicing a majority of the skills as they perceive they should be practiced to maintain the highest level of professional competence.

The data on Hypothesis 2, identified in Table #2, give evidence that all of the performance skills of middle school principals are perceived as significantly different by the teachers, when comparing those skills that are practiced with those skills that should be practiced by middle school principals. All skills in the ideal state exceeded the practiced state.

Table #1

Differences of the Principals' Perceptions of the Performance Skills That Are Practiced and Should Be Practiced in the Areas of Instructional Leadership, Administrative Service and Interpersonal Relationships

Performance Skill	Principal's Number of Valid Responses	Mean Difference	t-test Value	Significance Level at .05
Instructional Leadership				
1	21	-0.33	-2.65*	0.0155
2	19	-0.47	-3.38*	0.0034
3	20	-0.70	-6.66*	0.0001
4	20	-0.15	-1.14	0.2674
5	20	-0.15	-1.37	0.1864
6	20	-0.25	-1.75	0.0961
7	20	-0.30	-2.85*	0.0102
8	20	-0.30	-2.85*	0.0102
9	20	-0.30	-2.85*	0.0102
10	20	-0.25	-2.52*	0.0210
11	20	-0.50	-4.36*	0.0003
12	20	-0.20	-2.18*	0.0421
Administrative Service Area				
1	21	-0.42	-2.63*	0.0160
2	21	-0.33	-1.78	0.0896
3	21	-0.47	-2.91*	0.0086
4	20	-0.25	-2.52*	0.0210
5	21	-0.57	-4.38*	0.0003
6	21	-0.04	-1.00	0.3293
7	20	-0.60	-3.04*	0.0067
8	21	-0.19	-2.17*	0.0423
9	21	-0.71	-4.56*	0.0002
10	21	-0.19	-2.17*	0.0423
11	21	-0.00	-0.00	1.0000
12	21	-0.09	-1.45	0.1623
13	21	-0.42	-3.87*	0.0009
14	21	-0.14	-1.83	0.0829
Interpersonal Relationship Area				
1	21	-0.14	-1.37	0.1861
2	21	-0.28	-2.83*	0.0104
3	21	-0.14	-1.83	0.0829
4	21	-0.19	-1.45	0.1623
5	21	-0.28	-2.03	0.0554
6	21	-0.42	-2.42*	0.0250
7	20	-0.50	-2.36*	0.0289
8	21	-0.38	-3.51*	0.0022

Table #1 (Cont'd.)

Interpersonal Relationship Area				
9	21	-0.57	-4.38*	0.0003
10	21	-0.47	-3.21*	0.0044
11	21	-0.38	-2.02	0.0571

* Indicates significant difference at .05 level

Table #2

Differences of the Teachers' Perceptions of the Performance Skills That Are Practiced and Should Be Practiced By Middle School Principals in the Areas of Instructional Leadership, Administrative Service and Interpersonal Relationships

Performance Skill	Schools Represented	Mean Difference	t-test Value	Significance Level at .05
Instructional Leadership				
1	23	-0.63	-7.97*	0.0001
2	23	-0.86	-7.83*	0.0001
3	23	-0.96	-8.65*	0.0001
4	23	-0.47	-5.81*	0.0001
5	23	-0.78	-7.27*	0.0001
6	23	-0.58	-9.58*	0.0001
7	23	-0.63	-8.60*	0.0001
8	23	-0.52	-8.21*	0.0001
9	23	-0.57	-10.99*	0.0001
10	23	-0.96	-8.57*	0.0001
11	23	-0.73	-9.02*	0.0001
12	23	-0.45	-7.59*	0.0001
Administrative Service Area				
1	23	-0.62	-10.35*	0.0001
2	23	-0.56	-6.25*	0.0001
3	23	-0.71	-9.05*	0.0001
4	23	-0.91	-10.20*	0.0001
5	23	-0.87	-8.70*	0.0001
6	23	-0.53	-5.92*	0.0001
7	23	-0.85	-13.14*	0.0001
8	23	-0.53	-6.66*	0.0001
9	23	-0.77	-8.37*	0.0001
10	23	-0.32	-4.80*	0.0001
11	23	-0.42	-6.06*	0.0001
12	23	-0.45	-4.47*	0.0002
13	23	-0.66	-7.46*	0.0001
14	23	-0.43	-7.19*	0.0001

Table #2 (Cont'd.)

Interpersonal Relationship Area				
1	23	-0.36	-6.06*	0.0001
2	23	-0.48	-6.62*	0.0001
3	23	-0.57	-6.41*	0.0001
4	23	-0.61	-6.64*	0.0001
5	23	-0.70	-7.44*	0.0001
6	23	-0.53	-5.53*	0.0001
7	23	-0.55	-7.87*	0.0001
8	23	-0.96	-8.11*	0.0001
9	23	-0.98	-8.04*	0.0001
10	23	-0.95	-7.87*	0.0001
11	23	-0.79	-8.55*	0.0001

* Indicates significant difference at .05 level

According to the data presented here, the teachers agree with the principals' perceptions that the principals are not practicing what they should be practicing in a majority of the skills. The data give evidence that there are conflicting expectations of leadership behavior, this statement being based on the evidence that teachers perceive strongly that what should be practiced is not being practiced. The data in every skill lean significantly toward the "strongly agree" should be practiced response more than the "strongly agree" practiced response.

The data on Hypothesis 3, identified in Table #3, give evidence that a substantial majority (31 of 37) 83.7% of the performance skills are perceived as significantly different by the teachers and principals in the practice of these skills by the middle school principals. Furthermore, the principals' perceptions of the practiced skill ranked higher than the teachers' perceptions of 36 of 37 skills. The data also gives evidence that a majority of the performance skills in each of the three areas were perceived significantly different by the teachers and principals in the practice of these skills.

According to the data presented here, the principals and teachers are not congruent on what the principals are practicing in a large majority of the skills with very strong differences in certain skills. This data indicates evidence that there is a need for agreement if the principal is to serve in an important professional function. The findings of this study clearly indicate that the princiaps perceive they are practicing a majority of these skills, while the teachers indicate that they are not.

The data in Hypothesis 4, identified in Table #4, give evidence that a majority (19 of 37) 51.3% of the performance skills were perceived significantly different by the teachers and principals in what should be practiced. Furthermore, in all but three of the skills, the principals perceptions of the ideal state exceeded the teachers' perceptions.

Table #3

Differences of the Principals' and Teachers' Perceptions of the Performance Skills That Are Practiced By the Middle School Principal in the Areas of Instructional Leadership, Administrative Service and Interpersonal Relationships

Performance Skill	Principal's Number of Valid Responses	Mean Difference	t-test Value	Significance Level at .05
Instructional Leadership				
1	22	0.35	2.32*	0.0305
2	21	0.55	4.51*	0.0002
3	22	0.59	4.23*	0.0004
4	22	0.42	2.89*	0.0088
5	22	0.71	4.59*	0.0001
6	21	0.63	4.95*	0.0001
7	22	0.53	4.57*	0.0002
8	22	0.44	3.38*	0.0029
9	22	0.50	4.14*	0.0005
10	22	0.76	5.92*	0.0001
11	21	0.35	3.19*	0.0046
12	22	0.35	3.33*	0.0032
Administrative Service Area				
1	23	0.42	2.75*	0.0116
2	23	0.32	1.73	0.0972
3	22	0.32	2.18*	0.0409
4	21	0.83	6.12*	0.0001
5	23	0.55	3.63*	0.0015
6	23	0.56	4.26*	0.0003
7	22	0.24	1.33	0.1980
8	23	0.48	3.42*	0.0025
9	23	0.20	1.38	0.1801
10	23	0.53	4.49*	0.0002
11	22	0.73	6.21*	0.0001
12	22	0.89	6.72*	0.0001
13	23	0.45	3.57*	0.0017
14	23	0.53	4.35*	0.0003
Interpersonal Relationship Area				
1	23	0.17	1.33	0.1969
2	22	0.34	2.80*	0.0108
3	23	0.61	4.84*	0.0001
4	23	0.65	3.39*	0.0026
5	23	0.39	2.55*	0.0181
6	23	-0.02	-0.11	0.9100
7	23	0.18	0.89	0.3812
8	23	0.60	3.83*	0.0009

Table #3 (Cont'd.)

Interpersonal Relationship Area				
9	23	0.38	2.55*	0.0181
10	23	0.53	3.11*	0.0052
11	23	0.39	2.28*	0.0327

* Indicates significant difference at .05 level

Table #4

Differences of the Principals' and Teachers' Perceptions of The Performance Skills That Should Be Practiced By the Middle School Principal in the Areas of Instructional Leadership, Administrative Service and Interpersonal Relationships

Performance Skill	Principal's Number of Valid Responses	Mean Difference	t-test Value	Significance Level at .05
Instructional Leadership				
1	21	0.10	1.08	0.2947
2	20	0.28	2.99*	0.0076
3	20	0.42	7.54*	0.0001
4	20	0.10	0.77	0.4532
5	20	0.11	1.01	0.3267
6	21	0.32	3.09*	0.0058
7	20	0.24	2.85*	0.0102
8	20	0.24	3.55*	0.0021
9	20	0.29	3.36*	0.0033
10	20	0.07	0.87	0.3954
11	21	0.20	2.24*	0.0366
12	20	0.17	2.15*	0.0450
Administrative Service Area				
1	21	0.30	3.26*	0.0040
2	21	0.14	1.12	0.2756
3	22	0.09	0.67	0.5082
4	21	0.27	3.00*	0.0071
5	21	0.30	4.43*	0.0003
6	21	0.13	2.04	0.0553
7	20	0.06	0.44	0.6665
8	21	0.17	1.55	0.1364
9	21	0.19	1.47	0.1581
10	21	0.41	5.76*	0.0001
11	22	0.29	2.39*	0.0265
12	22	0.52	5.17*	0.0001
13	21	0.25	3.63*	0.0017
14	21	0.26	2.77*	0.0119

Table #4 (Cont'd.)

Interpersonal Relationship Area				
1	21	-0.01	-0.12	0.9062
2	22	0.20	2.32*	0.0302
3	21	0.25	2.69*	0.0140
4	21	0.31	2.95*	0.0080
5	21	0.02	0.22	0.8268
6	21	-0.07	-0.55	0.5870
7	21	0.15	1.40	0.1755
8	21	0.02	0.20	0.8441
9	21	0.03	0.34	0.7409
10	21	0.13	1.53	0.1408
11	21	0.03	0.29	0.7763

* Indicates significant difference at .05 level

The data also indicate that a majority of the performance skills in two of the three areas, instructional leadership skills, and administrative service skills, were perceived significantly different by the teachers and principals in what should be practiced by the middle school principal. In the interpersonal relationship area, there was a significant difference in only a minority of the skills, generally supporting the null hypothesis that there is no significant difference in the perception of the interpersonal relationship skills as they should be practiced.

According to the data presented here, the teachers and principals do not agree on the recommended skills that should be practiced by middle school principals in the instructional leadership and administrative service areas. However, there was congruency in the interpersonal relationship area on a majority of the skills, with both the teachers and the principals ranking these skills "strongly agree." The results of this hypothesis supports evidence that the principal's position is ambiguous. The results further supportevidence that there is a notable lack of agreement regarding the effective characteristics of the principal. In essence, teachers and principals simply cannot agree on what should be practiced, leaving the principal's position without agreement and ambiguous in terms of establishing effective characteristics that all support.

Conclusions

On the basis of the findings, several conclusions appear to be warranted: (1) The majority of the performance skills practiced by the middle school principals are not congruent with what they should be practicing, as perceived by the middle school principals themselves. (2) The teachers perceived all of the skills being practiced by the middle school principals as significantly different from the manner in which they should be practiced. Since the significance level was strong in all of the skill areas, the investigators conclude that there are basic reasons which effect the teachers' perceptions of the principals' performance. (3) There is a significant difference in what the middle school principals perceive they are practicing and what the teachers perceive they are practicing, on a large majority of the skills.

This conclusion is highly consistent with the second conclusion, but further supports the view that the principals are not perceiving the basic reasons which are causing the differences of the teachers' perceptions. (4) There is a significant difference in what middle school principals perceive they should be practicing and what teachers perceive they should be practicing, on a majority of the skills. A notable exception to this trend occurs in the interpersonal relationship area where the teachers and principals are congruent in their rankings of a majority of the skills. This congruency appears to suggest that teachers and principals perceive the interpersonal relationship skill area as the vehicle for attaining agreement in the other skill areas for determining what should be practiced. (5) Directional trends have emerged, evidenced in the data with the teachers and principals both stating that what should be practiced ranks higher than what is practiced. Even though a common directional trend exists for both principals and teachers, there is still a statistically significant difference in their perceptions, as outlined in conclusions 1 and 2. (6) Direction is also indicated in the data with the principals indicating a movement toward the "strongly agree" response in the practice of the stated performance skills. This is not in agreement with the perceptions of the teachers. The one exception to this trend exists in the interpersonal relationship skill of the principals' ability to utilize faculty meetings appropriately for both in-service orientation and administrative matters. In this case, the teachers moved toward the "strongly agree" response, rather than the principals. This evidence further supports conclusion 3, that principals perceive their practiced skills at a higher level than do the teachers.

Implications and Recommendations

On the basis of these findings, it appears that middle school principals need access to additional information concerning the degree to which they are perceived by their teachers in what skills they are practicing and what they should be practicing. Pre-service and in-service training for middle school principals concerning the performance skills necessary to fulfill the functions of middle school leadership is also indicated by the findings of this study as an urgent need. Above all, the findings indicate a need for principals to develop a clear understanding of the perceptions of their teachers. What a principal perceives he practices may not be viewed as practiced by the teachers of his school. The question exists: "How effective is the principal's leadership in fulfilling the needs of the middle school?"

Based upon the results of this investigation, the following recommendations are made: (1) Middle school educators should consider the list of recommended middle school practices contained in the study of literature in the planning, implementation, and/or evaluation of middle school programs in their respective schools. (2) Department of Education personnel should examine the results of this study as guidelines in the planning and implementation of training requirements for middle school principals. (3) The National Middle School Association should review the results of this study in the planning and implementation of appropriate workshops and conferences for middle school principals. (4) Colleges and universities should consider the data presented in this study in the planning of pre-service and in-service programs for middle school principals. (5) Middle school principals should survey the perceptions of their teachers on a regular basis. (6) Studies should be conducted to determine the reasons for the difference between the

principals' and teachers' perceptions of performance skills.

This study was undertaken to assess the performance skills of the middle school principal. The results of this investigation indicate that there is a wide discrepancy between the perceptions of principals and teachers in what is practiced and what should be practiced by the middle school principal. The data collected reveal that the principals do not understand, or are not using the perceptions of teacher, in the development and implementation of the performance skills necessary for effective leadership in the middle school.

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ADMINISTRATIVE STYLE AND ORGANIZATIONAL CLIMATE IN JUNIOR HIGH AND MIDDLE SCHOOLS

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The purpose of this study was to identify and compare administrative style and organizational climate of the junior high school with the middle school. More specifically, the study compared (1) junior high principals' administrative style and middle school principals' administrative style, and (2) junior high school climates and middle school climates. Further, the study analyzed relationships between climate and administrative style in junior high and middle schools.

Summary of Literature Review

The development of middle level education was initiated about the turn of the century in the United States. Numerous recommendations from national studies planted the seed for the growth of the concept. The earlier schools were referred to as junior high schools and grew fairly rapidly into the 1950's and early 1960's before significant criticism began to surface regarding the junior high. By the early 1960's criticism and frustration had mounted and a search for an alternative form became evident. The label "middle school" became popular in the late 1960's and was viewed as the alternative to the junior high school. The growth of the middle school concept has become quite rapid in the past few years.

Leadership and its dimensions have been written about extensively in recent years. One particular facet that has drawn a good deal of attention has been leadership style. The literature is replete with style theory and research, but very little research and theorizing has been focused at the middle level of education. A review of the literature revealed only a few studies at the middle level and a need for additional studies still exists.

The need for administrator involvement in the establishment of effective school climate is stressed in the literature. Various writers perceive the administrator to be the key in effective climate development. Theory and research is also available in the literature regarding organizational climate, but only a small amount is focused at the middle level of education. A review of the literature revealed relatively few studies at the middle level with a need for additional studies still existing.

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Two significant conclusions were drawn from the review of the literature of middle level education with regard to the principalship, leadership style, climate and the contrast of the "middle school" and the "junior high school."

1. Though the middle school was developed conceptually upon solid pedagogical issues which related to concerns about junior high school programs, the middle school, as it has typically been implemented, has not dealt with those concerns in a manner different from the junior high.

2. Many researchers have studied programmatic differences between middle schools and junior high schools, but minimal research has been completed which focused specifically upon contrast of the middle school and junior high school principalship (Brooks and Edwards, 1978).

Statement of Hypotheses

The folowing statistical hypotheses were tested in the study at the .01 level of significance:

Hypothesis 1: There are no significant differences between the perceptions of junior high school teachers and middle school teachers on the dimensions of (a) school climate openness, as measured by the Organizational Climate Description Questionnaire, and (b) principal administrative style, as measured by the Purdue Rating Scale for Administrators and Executives.

Hypothesis 2: There is no significant linear composite of teacher characteristic variables and administrative style variables, as measured by the Purdue Rating Scale for Administrators and Executives, which explains a significant amount of variance in the school climate, as measured by the Organizational Climate Description Questionnaire, for (a) junior high schools, (b) middle schools, and (c) combined junior high/middle schools.

Procedures

The population of this study consisted of teachers from nineteen middle schools and nineteen junior high schools from the midwest. Junior high schools in this study included grades 7-8-9 and middle schools were identified as grades 5-6-7-8 or 6-7-8. All schools in the study enrolled between 400 and 900 students. A twenty percent proportionate sample of teachers, with no less than five from each of the thirty-eight schools, was randomly selected for the study. The Purdue Rating Scale for Administrators and Executives and the Organizational Climate Description Questionnaire were administered to the teachers to measure administrative style and school climate openness, respectively.

Multivariate analysis of variance was employed to analyze the question of differences between perceptions of junior high school and middle school teachers on the dimensions of school climate openness and principal administrative style.

Multiple linear regression analysis was employed in the second phase of the study to analyze the linear relationship between the dependent variable, school climate openness, and the predictor variables, in an attempt to predict school climate.

Findings

Style and Climate Descriptive Data

The result of the analysis of data in this study revealed that junior high school teachers and middle school teachers perceptions of administrative style are more similar than different. An analysis of the administrative style factors indicated that the range of the average scores between the

middle school and junior high school was relatively small. Junior high teachers did perceive their principals to be stronger on 27 of the 36 items of the Purdue Rating Scale for Administrators and Executives. However, closer observation of the two profiles revealed that the majority of items were extremely close, and not significantly different.

Junior high school teachers and middle school teachers perceptions of organizational climate were also more similar than different. An analysis of the eight sub-scales of the Organizational Climate Description Questionnaire revealed a small range of scores between the junior high and middle school level. The widest range of scores was on the "consideration" dimension with middle schools producing a consistently higher score.

The types of climates predominating at the middle schools, junior high schools, and total middle level revealed no differences. The type of climate found to be operating at each level was the "closed climate." There were no differences in the perceptions of teachers at any level. Data of the prototypic profiles of an "open" and "closed" climate for each level, revealed that the middle schools, junior high schools, and total middle level followed the "closed climate" profile. There was, however, a slight deviation from the prototypic profile dimension of "hindrance," toward the "open" climate profile at each level, and "disengagement," toward the "open" climate profile at the middle school

Hypothesis Number One

Multivariate analysis of variance was used to test hypothesis 1. Findings of the statistical tests relative to this hypothesis are presented in Table #1. Data testing did not result in "F" values that were statistically significant. Therefore, the hypothesis that there are no differences between the perception of junior high and middle school teachers on style and climate variables was accepted.

In other words, in this study there were no statistically significant differences between climate, style of administrator and organizational level as measured by the Organizational Climate Description Questionnaire and the Purdue Rating Scale for Administrators and Executives.

Hypothesis Number Two

Multiple Linear Regression analysis was utilized to test hypothesis 2. Data from the testing of hypothesis 2 are presented in Table #2.

A linear regression model relationship was found between the predictor variable of "democratic orientation" and the dependent variable of "openness." The variable of "democratic orientation" consistently related to "openness," both correlationally as well as predictively. These data indicated clearly that principals exhibiting more emphasis on democratic orientation were administering schools with more open climates. Thus, an administrator desiring a more open climate would be well advised to incorporate the factor of democratic orientation in personal leadership style.

The multiple linear regression analysis produced regression model "F" values that were statistically significant. Therefore, the hypothesis that

there is no linear composite of teacher characteristic variables and administrative style variables was rejected at each of the three levels tested.

Table #1

Multivariate Analysis of Variance (MANOVA) of Differences Between Perceptions of Junior High and Middle School Teachers on Style and Climate Variables

(N = 146)

Variables	Mean	Sum of Squares	Mean Square	F*
Fairness of Subordinates	4.100	.4508	.4508	1.24
Administrative Achievement	4.005	1.294	1.294	2.98
Democratic Orientation	4.043	.3325	.3325	.98
Openness Score (OCDQ)	40.65	57.88	57.88	.31

*Note: Of the variables tested, none were significant.

Recommendations

The following recommendations were developed as a result if the analysis and interpretation of the data from this study.

1. The issue of similarity/dissimilarity between the organizational levels of middle level education (i.e., "middle school" and "junior high school") is probably moot. This study has supported numerous earlier studies in emphasizing the similarity of the two organizational patterns as they are currently being administered. However, researchers should continue to periodically review the issue of similarity/dissimilarity so that if the similarity pattern should change, an analysis of the change can be made and its relationship to effectiveness of programs at the middle level can be studied.

2. Due to significant relationships between climate "openness" and administrative style, practitioners should consciously assess their own administrative style and its relationship to their school climate. Researchers and professors of educational administration should further study climate-style relationships in an effort to improve upon the variables within the predictive model, thus providing the practitioner with additional data from which to interpret the climate-style phenomena.

Table #2

General Linear Regression Model: Seven Predictor Variables For School Openness (OCDQ) in Middle Schools, Junior High Schools, and Middle/Junior High Schools Combined

Variables	Middle Schools (N = 77) (df 7,69)	Junior High Schools (N = 69) (df 7,61)	Middle/Junior Highs Combined (N = 146) (df 7,138)
Openness Scores (OCDQ)			
Mean	41.24	39.98	40.65
Standard Deviation	10.04	12.43	11.47
Predictor Variables in Regression Equation, "F" Values:			
Age	0.03	0.02	0.50
Years Experience	6.10	0.36	1.58
Years This School	11.57	0.53	3.79
Sex	0.24	2.19	1.87
Fairness to Subordinates	1.13	0.71	0.25
Administrative Achievement	0.52	0.41	0.72
Deomcratic Orientation	5.84	3.15	6.51*
R Square for Model	38.08%	40.39%	33.12%
Regression Model "F" Value	6.06*	5.90*	9.77*

* Value $p < .01$

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TEACHING DECIMAL MATH WITH CALCULATORS

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With the advent of microminiaturization, electronics has undergone its second revolutionary phase. Not since the discovery of the transistor have such dramatic changes been witnessed in the production of electronic apparatus. At the forefront of the revolution is the "micro-electronic data processor," better known as the electronic calculator. In the past six years, the electronic calculator has evolved from a rather bulky piece of apparatus found only in the research laboratory, to a household appliance small enough to fit in a pocket and common enough to be found in nearly every household. The price of these miniature marvels has fallen from an average of three hundred dollars six years ago, to as low as five dollars today. Housewives now do their shopping accompanied by their calculators, deciphering unit prices and checkbook balances. Homeowners compute tax evaluations, while small business operators calculate payroll deductions and interest payments, all with the electronic calculator. As these calculators become more common, a new age of mathematics is evolving, and mathematics teachers, as well as science teachers, must face the problem of how to deal with these math machines. Teachers must determine the extent to which the hand-held calculator can be used to teach math concepts, at the same time determining the limitations of machine math.

Statement of the Problem

The purpose of this study was to investigate the effects of the use of hand-held calculators in the teaching of decimal arithmetic in seventh and eighth grade pre-science units. In particular, the effects of calculators on pencil-and-paper computational skills, and on conceptual understanding were studied.

Research Question

In the course of this study, the following question was investigated:

What effect will the use of calculators as instructional aids have on the penci-and-paper computational skills of middle school students as reflected in the scores of those students on a decimal math test.

Review of the Literature

In studying the concerns of educators with regard to the use of calculators as instructional instruments, Suydam (1976) found that the concerns of those opposed to the use of calculators could be summarized as follows:

1. They could be used as substitutes for developong computational skills.
2. They are not available to all students.
3. They may give a false impression of what mathematics is.

EA 014 542

4. They are faddish.
5. They lead to maintenance and security problems.

At the same time, she found that those educators who favored the use of calculators as instructional aids presented arguments that were summarized in her study as:

1. They aid in computation.
2. They facilitate understanding and concept development.
3. They lessen the need for memorization.
4. They help in problem solving.
5. They motivate.
6. They aid in exploring, understanding, and learning algorithmic processes.
7. They encourage discovery, exploration, and creativity.
8. They exist.

Arguments on both sides of this issue have been presented by educators and researchers, revealing many questions, but few answers; therefore this study was undertaken to try to answer some of these questions. The results of the study may help middle school science and math teachers in the development of future curricula.

Design of the Study

This study consisted of three general sections: (1) a pre-unit evaluation to determine the extent of knowledge of the population previous to the instructional unit, (2) an eight day learning unit consisting of a series of worksheets designed to present the concepts of decimal math, and (3) a post-unit evaluation. The unit was presented to the seventh and eighth grade students of Brookings Middle School, Brookings, South Dakota. The unit was implemented as a part of the science curriculum of the middle school, and represented an introductory presentation in the first two weeks of the school year. Both grades were divided so that approximately one-half of each grade would use calculators during the instructional period, while the other half would not be allowed the use of calculators. Neither group was permitted to use calculators on either the pre- or post-test, however. The instructional unit and the pre- and post-unit evaluations were presented by the science staff of Brookings Middle School.

Research Population

The subjects of this study were 384 seventh and eighth grade students of Brookings Middle School, Brookings, South Dakota. These students were members of 9 seventh grade and 9 eighth grade science classes, and represented the entire seventh and eighth grades of the Brookings School District, male and female, with the exception of students absent at the time of the study (which was implemented through the first two weeks of September, 1978). No selection process was used to determine the members of the

population. The population was divided in half, with five sections in each grade allowed to use calculators. No student was allowed to use a calculator on the pre-and post-tests.

Instrumentation

The instrument used for the evaluation in this study was a forty question multiple choice test designed by the researcher. The test was presented originally to the eighth grade students in the spring of 1978. These students would, through promotion, not be attending the middle school during the following year, and therefore would not be participating in the study in the following fall. The results of this preliminary presentation were then analyzed to determine a reliability coefficient using the Kuder-Richardson Twenty formula for reliability, with computations accomplished with the aid of the South Dakota State University computer facilities. These calulations revealed an internal consistency coefficient of 0.874. It was decided that this value was acceptable, and, therefore, that the instrument was acceptable for use as the pre- and post-measure in this study. The internal consistency was again calculated using the pre-test results as a further assurance of internal reliability, and the internal consistency coefficient was this time determined (again using the Kuder-Richardson Twenty formula) to be 0.91818. This again indicated that the reliability of the instrument was within acceptable limits, and that results of testing with this instrument would also be within an acceptable range of reliability.

The instructional unit was composed of three learning packets. These dealt with the addition, subtraction, multiplication, and division of decimal numbers. They were designed to present the topics as they woud be tested in the instrument of evaluation, with examples and exercises similar to the exercies on the instrument. Teacher interaction was guaranteed at various points on the packets ghrough check points that required the teacher's initials before the student was allowed to proceed. This procedure of matching test questions to packet exercises provided assurance that the instrument would maintain content validity for these exercises.

Analysis of the Data

Upon completion of the scoring of the pre- and post-tests, the data was compiled and analyzed with the help of the South Dakota State University computer facilities. The scores of the tests were first analyzed using an analysis of variance (ANOVA) to compare the means of various groups. An analysis of covariance (ANCOVA) was then used to adjust the means of the groups with respect to the initial performance on the pre-test.

To determine the effect of the use of calculators on the learning of decimal operations as indicated by the scores on computational tests, the means of the scores of two groups, a group using calculators during the instructional period and a group not using calculators, were analyzed. In order to determine any pre-instructional differences between the groups, pre-tests were given and analyzed using ANOVA. The results of this analysis, as seen in Table #1, indicate that there is no significant difference between these two groups, since ANOVA provided an "F" ratio of 1.11, a non-significant value for "F". The post-test scores were then also analyzed

using both ANOVA and ANCOVA to determine whether or not the two groups showed any significant differences at the end of the instructional unit. Both of these analyses determined "F" ratios of less than 1.00, indicating again that there was no significant difference between these two groups upon completion of the instructional period.

Table #1

Pre- and Post-Test Means and "F" Values For
Groups With and Without the Use of Calculators
On an Instructional Unit

	With Calculators	Without Calculators	"F"
Pre-Test			
Mean	25.28	24.33	1.11
S.D.	9.22	8.41	
Post-Test			
Mean	29.74	29.58	1.00
S.D.	8.62	7.22	
Adjusted Mean[a]	29.42	29.93	1.00

[a]Determined through the use of ANCOVA.

Summary, Conclusions, and Recommendations

Summary

The library study undertaken prior to the beginning of the actual research of this project revealed much about the current status of the calculator as an instructional implement. The opponents to the use of calculators in the schools centered their arguments on the fear that the increase in the use of calculators would foster a decrease in the conceptual understanding and computational skills of students, leading to a dependence on those machines. Those who favor the use of calculators attempt to counter the fears of dependence while at the same time stressing the motivational aspects of calculator use, especially in the education of slow-learners and disadvantaged students. These arguments continue due to the relative scarcity of research in this area, as well as the inconclusive nature of the results of much of that research. Much of this problem is due quite simply to the fact that inexpensive, hand-held calculators are a very recent development. The research that has been done, however, does indicate that the much-feared dependence on the machines may not be a reality.

Since solid research was so scarce, and since the use of calculators has been a growing concern in the Brookings, South Dakota, School District,

a research project was undertaken there to attempt to resolve some of the questions that had arisen concerning the use of calculators. This project was designed to determine whether or not any gains in computational skills occurred through the use of calculators as instructional implements, while at the same time studying the possibility of the formation of a conceptual and computational dependence which would undermine the pencil-and-paper computational skills of those who had used the calculators.

The seventh and eighth grade students of Brookings Middle School were presented with a decimal arithmetic unit as a part of their science curriculum, with half of these students using calculators on the instructional unit, while the other half was prohibited the use of calculators. A pre-instructional test was given to all students to determine the extent of their knowledge of decimal arithmetic previous to the presentation of the instructional unit, and a post-test was given at the conclusion of the instruction; no student was permitted the use of a calculator on either of these tests. The results of these two tests were then analyzed to determine the effects of the calculators on the achievement of the students.

Two types of statistical analysis were used to study the results of the two administrations of the test, an analysis of variance (ANOVA) and an analysis of covariance (ANCOVA). When the two grade levels were studied independently, no significant difference was found between the calculator group and non-calculator group in either grade. Simplified, the results of these analyses indicated no significant difference in the performance of students on the tests, whether a calculator was used on the instructional unit or not.

Conclusions

The analyses undertaken in this study indicate that in an instructional unit of this type, calculators affect the scores of students in the seventh and eighth grades on computational tests was very little. No significant difference in these scores was found in any of the various analyses. It can be concluded, therefore, that in this study, calculators, as instructional aids, did not promote or hamper the performance of the students on the decimal operations, as evidenced by their test scores.

On the other hand, these same data demonstrate that the dependence on calculators that is feared by many researchers and teachers does not develop when those calculators are used as instructional aids. Since neither the group that used calculators during the instructional period nor the group that did not use calculators was allowed the use of calculators on the tests, and since the subsequent analyses of those tests determined no significant difference between the scores of those two groups on the tests, it can be concluded that the pencil-and-paper computational skills of the students in the two groups were equivalent; the computational skills of the students were not dependent on the machines. This is an extremely important finding, since it contradicts the greatest fear of those who oppose the introduction of calculators into the schools.

As has been stated by the opponents of calculators, using these machines as a "black box" answer source would indeed be detrimental to the students. As Aidala stated, "the use of a calculator (is) not an end in itself, but a

means to an end" (1978). Even though no loss in computational skills occurred in this study, the design of the instructional units used prohibits the conclusion that calculators can be used freely throughout math instruction without careful guidance. "One thing we must make clear to the public at large is that none of us intends to have calculators entirely take over number work" (Bell, 1978).

At the same time, however, the motivational advantages of calculators must be recognized. Students are generally enthusiastic about the use of any kind of apparatus in class, and that enthusiasm can be directed through the apparatus to the subject itself, if utilized correctly. In demonstrating that students will not develop a dependence on calculators, this study should provide math and science instructors with the security needed to proceed into the development of curricula using these calculators as instructional aids, taking advantage of the "great motivational prowess" (Aidala, 1978) that the machines possess. This motivational stimulus might be especially helpful with slow learners, especially in science classes where computations can often cause so many problems for students that the class itself becomes frustrating.

Recommendations

This study was originally limited to a pre-science decimal math unit, and was therefore short-ranged in nature. A logical second step would be a long range study of a similar nature that would test concept retention in the two groups, as well as longitudinal gains in skills. The more data that could be collected, the more solid these conclusions would be. Other analyses might also be undertaken across sex lines and between grades to determine the differences between the effects of calculators at various age levels. A more comprehensive study might be undertaken at all grade levels, kindergarten through twelfth grade.

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EXCEPTIONAL STUDENTS: EXCEPTIONAL NEEDS

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EA 014 543

Introduction

The middle school years, ages 10 to 14, are marked by rapid changes in a student's physical and psychological characteristics. Many writers have addressed the intra- and interpersonal problems that often develop during the adolescent years (Hall, 1904; Freud, 1946; Wickes, 1966). These transitional years, from childhood to adulthood, are times when counselors, teachers, school psychologists, and other support personnel should provide services that can enhance the positive growth of students.

Conant (1960) and Dinkmeyer and Owens (1969) indicated that guidance services facilitate total development and should be available to all students. Yet, the guidance needs of approximately 1,800,00 exceptional students in the United States have been neglected to a large extent (Fine, 1969; Gowan, 1971; Dunn, 1973; Martinson, 1973). Unfortunately, most school support services in the past have been limited to identification and placement of these students in exceptional programs, without regard to their specific guidance needs. More recently, there has been emphasis on "mainstreaming" these students in order to meet educational objectives. This approach, however, has created additional needs for guidance, as these children have more interactions and involvement with the rest of the school population and the regular teaching staff.

What are the guidance needs of the educable mentally-retarded (EMR) and the gifted (GIF) students who attend middle school? What types of problems, arising from their needs, would they be willing to discuss with a professional school counselor?

Guidance Needs of EMR and GIF Students

Guidance needs of EMR and GIF students can be determined in part by an in-depth study of the student's self-concepts. Researchers have reported considerable information about the self-concepts of these students and the relationship to social grouping and academic achievement (Guthrie, Butler, and Gorlow, 1961; Purkey, 1970; Jones, 1972; Goldman and May, 1972; Trowbridge, 1974). But is there a difference between the self-concepts of EMR and GIF students? Do students who report many guidance needs have different self-concepts from those who report fewer needs?

The Counselor and the Exceptional Child

Many students discuss their problems with a school counselor. Their willingness to explore a problem is most often based upon their perceptions of the counselor as a helping person. If the student views the counselor positively, they are more likely to seek the counselor out and be receptive to help. If they have little regard for the counselor, then guidance needs may not be met even if counseling services are available.

Some students who have many needs and problems may not be receiving adequate counseling service. Counselors are busy people with many job demands and they may not always be available to provide the quantity and quality of service that some students require, especially exceptional students. Who sees the counselor? Those with the most reported problems or those with fewer needs?

In order to answer these and other questions, a study was conducted that involved responses from students who were identified as exceptional and who were attending middle school. It was the purpose of this investigation to determine the needs and problems of exceptional middle school students as well as their perceptions of guidance services.

Methodology

Subjects

The students in this study were drawn from EMR and GIF classes in six middle schools in Alachua County, Florida. Students with IQ's from 55 to 75 (Binet or WISC) or greater than 129 (Slosson) were eligible for placement in these exceptional classes. There were 229 EMR students and 245 GIF students who took part in the study. Four of the schools had two counselors each and two schools had one counselor each.

Instruments

Three criterion instruments were administered to the students. The Modified Mooney Problem Check List (Scoulller, 1975) gave scores in seven problem areas, as well as a total score, in order to assess students'guidance needs. The Mooney was modified by using only the even numbered items of the original inventory.

The Piers-Harris Children's Self-Concept Scale (CSCS: Piers, 1969) was used to measure self-concept. The CSCS consists of 80 declarative sentences to which the subjects respond yes or no. There are positively-worded and negatively-worded sentences from which to choose.

The Counseling Service Questionnaire (CSQ), developed by the authors, was administered to ascertain the number of counselor contacts, problems viewed as appropriate for discussion with a counselor, and perceived counselor attributes. "Problem areas" for discussion with a counselor were adapted from the Modified MPCL. All these instruments were administered and read to the students by their classroom teachers.

Results

Guidance Needs

The analysis of the data indicated that there was a significant difference in the total number of guidance needs, as reported by EMR and GIF students on the Modified MPCL (EMR $\bar{X} = 41.98$; GIF $\bar{X} = 17.33$; $t = 13.32$; $p < .05$). The range for EMR students was 1 to 96 and for GIF students 1 to 94. The rank orders of problem areas for EMR and GIF students are reported in Table #1.

Table #1

Problem Areas and Appropriateness for Discussion

Responses, in percentages and/or rank orders for EMR and GIF students to the following categories: (1) Problem areas for the MPCL; (2) problem areas for the Counseling Service Questionnaire; and (3) appropriateness of the seven problem areas from the Counseling Service Questionnaire for discussion with a counselor -- only those students with <u>many</u> guidance needs.

Problem Areas (Topics)	(1)* Rank Order of Problem Areas		(2)* Discussion with Counselor						(3)* Discussion with Counselor (high need students only)					
			Percent YES	Percent NO	Rank	Percent YES	Percent NO	Rank	Percent YES	Percent NO	Rank	Percent YES	Percent NO	Rank
	EMR	GIF	EMR			GIF			EMR			GIF		
Self-Centered Concerns	1	1	68	32	4	49	51	4	65	32	3	67	33	5
Money, Work and Future	2	3	82	18	2	61	39	2	80	20	1	74	26	3
Relations to People in General	3	2	72	28	3	61	39	2	68	32	3	76	24	2
School	4	7	18	17	1	67	33	1	76	24	2	79	21	1
Health and Physical Development	5	5	66	34	5	38	62	7	56	44	5	50	50	7
Home and Family	6	4	57	43	6	44	56	6	48	52	6	69	31	4
Boy and Girl Relations	7	6	50	50	7	45	55	5	48	52	6	60	40	6

* (1) MMPCL
* (2) CSQ
* (3) CSQ -- Students with many guidance needs

Both EMR and GIF students reported the most perceived problems in the area of "Self-Centered Concerns" (e.g., lacking self-confidence, lacking self-control, and getting into trouble). The next two most frequently checked problem areas for EMR students were "Money," "Work," and "The Future" (e.g., spending money foolishly and needing to decide on an occupation), and third "Relations to People in General," (e.g., wishing people liked me better and hurting people's feelings). In contrast, the GIF students reversed the order of these two problem areas.

The needs reported by EMR and GIF students differed in frequency rather than kind. EMR students reported at least twice as many problems in each area than GIF students. Both groups, however, were most concerned about their own development and their relationships with others. The dilemma of developing a personal identity while maintaining a place in a peer group was apparent for both groups.

EMR students reporting 21 problems or less were viewed as having a low number of guidance needs, whereas those who reported more than 62 were seen as having a high number. GIF students who reported fewer than 4 problems were in the low category while those who reported more than 33 were in the high category.

Those students who reported the most guidance needs also indicated that they had more frequent contacts with counselors than those students who reported fewer guidance needs. EMR students with many guidance needs ($\bar{X}$ = 74.21) had approximately six (5.68) counselor contacts during the school year, while GIF students with many needs ($\bar{X}$ = 39.97) indicated an average of four (3.8) counselor contacts.

Self-Concept

The self-concept scores of the two groups were significantly different (EMR $\bar{X}$ = 50.41; GIF $\bar{X}$ = 58.31; $p < .05$). However, the self-concepts of EMR and GIF students who reported a high number of guidance needs were almost identical (EMR $\bar{X}$ = 47.84; GIF $\bar{X}$ = 47.76). The lowest self-concepts were reported by EMR males with many needs ($\bar{X}$ = 47.76) while the highest self-concepts were reported by GIF females with few guidance needs ($\bar{X}$ = 71.50).

The correlation between the total number of perceived problems and self-concept ($r = -.57$) is significant beyond the .05 level. As the self-concepts of EMR and GIF students increased, the reported number of perceived problems decreased.

There was a low but significant correlation ($r = .26$; $p < .05$) between the number of positive self-statements EMR and GIF students made about themselves and the way they viewed counselors. It would appear that a more positive self-concept resulted in a more positive attitude towards others. Both EMR and GIF students viewed the counselor as having more positive attributes than negative. This suggests that both groups of students would seek counseling assistance or be receptive to counselor intervention.

Counseling Topics

The types of problems that EMR and GIF students would be willing to

discuss with a counselor were also investigated. At least 50% of the EMR students felt that all seven problem areas (see Table #1) were appropriate to discuss with a school counselor. Only three problem areas ("School," "People in General," and "Work, Money, and the Future") were viewed as appropriate for discussion by the GIF students. However, EMR and GIF students with "many guidance needs" felt differently. The majority of high problem EMR students indicated that five areas ("Personal Problems," "Money, Work and the Future," "Problems in General," "School," and "Health and Physical Development") were appropriate while the majority of high problem GIF students thought that all seven areas were appropriate for discussion.

Both EMR and GIF students focused primarily on those guidance problems which related to their self-identity, relationships with other people, and occupational and future concerns. Because the middle school years are marked by much social stress and role searching, this result is not surprising. Teachers and counselors should continue to emphasize guidance problems directed at these areas. Classroom units might be designed to help students further explore their feelings and behaviors as they affect themselves and others.

GIF students, many of whom were academically successful, responded with the least concern to questions about school (ranked 7th). EMR students, however, ranked school concerns 4th. They frequently experience academic problems, negative labeling, and are singled out by the faculty as "problem students." Moreover, most EMR students come from disadvantaged backgrounds, and the school if often the only real meeting place for many of them. Thus, the school may have a more central role in their self-identities.

Implications

Both EMR and GIF students have many guidance needs. Some are willing to discuss these problems with a school counselor. Apparently, when a school counselor is visible and effective, both EMR and GIF students view the counselor as someone to talk with about a variety of different counseling topics. In contrast, some GIF students who do not experience as many problems tend to view the work of a counselor as more limited and less personal

It was not surprising to learn that in general, GIF students have higher self-concepts than EMR students. However, it was interesting to note that the self-concepts of EMR and GIF students who reported a high number of guidance needs were almost identical.

The self-concepts of EMR students are significantly lower than GIF students. This finding could be a result of at least two factors: (1) placement in an EMR class can negatively affect the self-concept; and (2) the black/non-black ratio between the classes (EMR - 82.57% black; GIF - 4% black) could negatively affect the self-concepts of black children. One interesting finding, however, may mitigate against explanation number 2. Both EMR and GIF students who reported many guidance needs made few positive statements about themselves. The more problems a student reported, the lower the self-concept, and vice versa.

A more extensive investigation into the concerns and problems of excep-

tional students with problems is needed. Can the problems these students experience be effectively resolved within the school setting? Will it take more extensive counseling or should these students be referred for help outside the school? A realistic limitation for some of these students is a lack of support within the educational setting. Counselors with available time and expertise should be given more opportunities to provide guidance for those students who have problems and who lack the resources for outside assistance.

Middle school counseling is relatively new. The data from this study suggest that there is a need for middle school counselors and that they can play an important part in the mainstreaming of exceptional children. Because there are few counselors, more teachers are going to have to be involved. Counselors and teachers are going to have to collaborate and work cooperatively together.

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